



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/674,931	11/08/2000	Atsushi Yamamoto	001348	8056 S
23850	7590	08/27/2003		EXAMINER
ARMSTRONG,WESTERMAN & HATTORI, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006				BALSIS, SHAY L
			ART UNIT	PAPER NUMBER
			1744	

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/674,931	YAMAMOTO ET AL.
	Examiner Shay L Balsis	Art Unit 1744

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 17 July 2003.
- 2a) This action is **FINAL**.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-15 is/are rejected.
- 7) Claim(s) 16 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Ackerman (USPN 2592099).

Ackerman discloses a toothbrush wherein the tufting holes are inclined, in directions perpendicular to lengthwise directions of the handle length, toward a tufting surface so as to have tufts implanted therein support one another. The tufting holes are shown to be *almost* elliptical. Since applicant has not specifically stated what *almost* elliptical is, it is determined that a circular hole is to be considered *almost* elliptical. There is at least one group of tufting holes that form a pair inclined to an inside. There is a plurality of converging blocks of pairs facing and supporting each other. The converging blocks are at least at a front and a back of the tufting base.

3. Claims 1-3, 6 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Strasser (USPN 2168964).

Strasser discloses a toothbrush wherein the tufting holes are inclined, in directions perpendicular to lengthwise directions of the handle length, toward a tufting surface so as to have tufts implanted therein support one another. The tufting holes are shown to be *almost* elliptical. Since applicant has not specifically stated what *almost* elliptical is, it is determined that a circular

hole is to be considered *almost* elliptical. There is at least one group of tufting holes that form a pair inclined to an inside. There is a plurality of converging blocks of pairs facing and supporting each other. The converging blocks are at least at a front and a back of the tufting base.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1 and 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman (USPN 2592099) and Strasser (USPN 2168964) both in view of Oishi et al. (USPN 5799353). Ackerman and Strasser teach all the essential elements of the claimed invention however, the references fail to teach elliptical tuft holes and tufts that have been worked into a V-shape.

With regards to claim 1, the references teach *almost* elliptical tuft holes while Oishi et al. teaches elliptical tuft holes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use elliptical tuft holes as taught by Oishi et al. instead of *almost* elliptical tuft holes as taught by Ackerman and Strasser. The motivation for doing so would be to provide a toothbrush that effectively removes plaque attached to or deposited on all the regions of the tooth surface, interdental space and cervical margin, and to conduct efficient tooth brushing (Oishi abstract). Therefore, it would have been obvious to combine Oishi with Strasser and with Ackerman to obtain the invention as specified in claim 1.

With regards to claim 7, Oishi et al. teaches a toothbrush comprising elliptical tuft holes with bristles tufts that are shaped in a V-formation (figure 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to shape Ackerman and Strasser's bristles in V-formation to allow for strong stiffness of the bristles and excellent plaque removal efficacy while suppressing excessive stimulation to gingiva (col. 4, lines 1-45).

6. Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman and Strasser both in view of Nicolas (USPN 4706322).

Ackerman and Strasser teach all the essential elements of the claimed invention however, the references fail to teach the exact inclination of the tufting holes or the exact size of the head of the toothbrush that is occupied by tuft holes.

With regards to claim 4, Nicolas teaches a toothbrush with bristles that are inclined toward a surface of a tuft base. The tuft holes are inclined at an angle of 10 degrees with respect to the vertical (col. 3, lines 59-68, figure 4). It would have been obvious to one of ordinary skill in the art to use Nicolas' angle of inclination or any angle of inclination between 2 and 10 degrees so desired or required, including as claimed to optimize the performance of the bristles and their cleaning ability.

With regards to claim 13, Nicolas teaches a brush head that has a width of 12 mm and a length of 20 mm. As shown in figure 1, the tufting holes account for a majority of the brush head and therefore account for 10-30 mm in the direction of the handle length and 5-15 mm in the direction of the handle width. It would have been obvious to one of ordinary skill in the art to have the bristle tufts occupy the claimed space on the brush head to optimize the brushing performance.

7. Claims 5, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman and Strasser both in view of Curtis et al. (USPN 5446940).

Ackerman and Strasser teach all the essential elements of the claimed invention however, the references fails to teach tufting holes that are rectangular in shape, with short side dimensions of .8 to 2.0 mm and long side dimensions of 1.5 to 5.0 mm. The references also fail to teach a distance of .2 to 4.0 mm between converging blocks.

Curtis et al. discloses a distance at the base between of the paired tufts to be about 0.065 in (1.65 mm). The paired tufts can include the bristles next to each other on the brush head such as the first pair of bristles (30) on figure 7 on the bottom left corner (col. 6, lines 1-8). The bristles (30) are in the same lateral row as the middle bristles (32) and therefore the spacing between the rows of middle bristles (32) is the same as the spacing between outside bristles (30). Curtis also teaches rectangular tufting holes that accommodate rectangular tufts. The dimensions of the tuft are 0.047 in (1.193 mm) on the shortest side and 0.060 in (1.52 mm) on the longest side (col. 6, lines 38-47). As shown in figure 7, the longest side of the tuft hole is in the lengthwise direction of the handle. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use rectangular tufts instead of *almost* elliptical because rectangular tufts sweep plaque off tooth surfaces and also optimize the resiliency as compared to round tufts as claimed.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman and Strasser both in view of Solanki et al. (USPN 6314605).

Ackerman and Strasser teaches all the essential elements of the claimed invention however, the references fail to teach rows of converging blocks that are offset from each other.

Solanki et al. teaches a toothbrush with bristles tufts offset from each other as shown in figure 4. It would be obvious to one of ordinary skill in the art to have the paired bristle tufts or converging blocks in one row offset from the converging blocks in the next row in Ackerman and Strasser's invention as shown in Solanki's invention to allow the tufts or converging blocks to operate independently of each other to avoid obstruction from other tufts or converging blocks. Thus, allowing the tufts to penetrate better into interproximal areas (col. 4, lines 27-38).

9. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman and Strasser both in view of in view of Chen et al. (USPN 5590438).

Ackerman and Strasser discloses all the essential elements of the claimed invention including groups of tufts that are anchored into round cavities, however, the references are silent about the type of anchoring means used. Chen et al. teaches a method of anchoring bristles to a toothbrush. Chen teaches folding the bristle tuft in half, placing in a tuft cavity and driving an anchor into the tuft cavity to hold the bristles into the tuft cavity. The anchor can be positioned numerous ways based on the tuft shape as shown in figures 6-11, such as one where the anchor is parallel to the short side of the tuft cavity as in figure 10. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use Chen's method of anchoring as the anchoring method in Ackerman and Strasser's invention to prevent bristles from loosening and falling out of their tuft cavities (col. 1, lines 26-40).

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ackerman and Strasser both in view of in view of Chen et al. as applied to claim 11 above and further in view of Solanki et al.

Ackerman and Strasser in view of Chen disclose all the essential elements of the claimed invention however they fail to teach bristles that are not lined up on one straight line in the lengthwise direction of the handle. Solanki et al. teaches a toothbrush with bristles tufts offset from each other as shown in figure 4. This in turn teaches bristles that are not lined up in a straight line in the lengthwise direction of the handle. It would have been obvious to one of ordinary skill in the art at the time the invention was made to offset the bristles as taught by Solanki to allow the bristles to operate independently of each other to avoid obstruction from other tufts or converging blocks. Thus, allowing the tufts to penetrate better into interproximal areas (col. 4, lines 27-38).

***Allowable Subject Matter***

11. Claim 16 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Claim 16 states the limitation that there are five rows of tufts in the lengthwise direction with rows one and five forming a converging block, rows tow and four forming two converging blocks and row three forming one converging block. None of the prior art teaches the exact number of converging blocks per row. Therefore, the claim is free from the prior art.

***Response to Arguments***

12. Applicant's arguments, see pages 11-18, filed 7/17/03, with respect to claims 1-16 have been fully considered and are persuasive based upon the amendment. The 102 rejections of claims 1-16 have been withdrawn with regards to the JP reference 62-106523, the Fischer reference (USPN 6237183), the Nicolas reference (USPN 4706322) and the Curtis reference (USPN 5446940).

***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

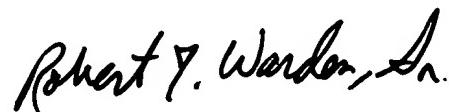
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shay L Balsis whose telephone number is 703-305-7275. The examiner can normally be reached on 7:30-5:00 M-Th, alternating F.

Art Unit: 1744

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Warden can be reached on 703-308-2920. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-5665.

S1b  
8/21/03



ROBERT J. WARDEN, SR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700